

**Abstract****ANTI-REFLECTION COATINGS FOR SEMICONDUCTOR LASERS**

- 5 The present invention concerns an anti-reflection coating for semiconductor lasers, in particular a coating on the laser facet with advantageous properties resulting in improved reliability and reduced probability of specific breakdowns, especially so-called catastrophic optical damages (CODs). It is a quarter-wave coating with a predetermined reflectivity, preferably between 0 and 10% and consists of or
- 10 comprises  $\text{SiN}_x\text{:H}$ . It is preferably applied by a Plasma-Enhanced Chemical Vapor Deposition (PE-CVD) process whose process parameters are controlled such that a desired optical thickness and refractive index of the coating are achieved. The PE-CVD process may be controlled to result in an Si/N ratio between about 0.5 and 1.5 and/or to produce a coating of essentially amorphous  $\text{SiN}_x\text{:H}$  whose density
- 15 approaches the density of crystalline  $\text{Si}_3\text{N}_4$ .